UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/776,846	02/06/2001	Sung-nam Lee	030681-280	6862

7590 10/29/2003

Charles F. Wieland III
BURNS, DOANE, SWECKER & MATHIS, L.L.P.
P.O. BOX 1404
Alexandria, VA 22313-1404

EXAMINER	
CRANE, SARA W	
ART UNIT	PAPER NUMBER
2811	

DATE MAILED: 10/29/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Interview Summary	Application No.	Applicant(s)	
	09/776,846	LEE ET AL.	
	Examin r	Art Unit	
	Sara W. Crane	2811	

All participants (applicant, applicant's representative, PTO personnel):

(1) *Sara W. Crane*. (3)_____.

(2) *Douglas Pearson*. (4)_____.

Date of Interview: *24 October 2003*.

Type: a)☒ Telephonic b)☐ Video Conference
c)☐ Personal [copy given to: 1)☐ applicant 2)☐ applicant's representative]

Exhibit shown or demonstration conducted: d)☐ Yes e)☒ No.
If Yes, brief description: _____.

Claim(s) discussed: *1*.

Identification of prior art discussed: *as in the rejection of claim 1*.

Agreement with respect to the claims f)☐ was reached. g)☐ was not reached. h)☒ N/A.

Substance of Interview including description of the general nature of what was agreed to if an agreement was reached, or any other comments: *See Continuation Sheet*.

(A fuller description, if necessary, and a copy of the amendments which the examiner agreed would render the claims allowable, if available, must be attached. Also, where no copy of the amendments that would render the claims allowable is available, a summary thereof must be attached.)

THE FORMAL WRITTEN REPLY TO THE LAST OFFICE ACTION MUST INCLUDE THE SUBSTANCE OF THE INTERVIEW. (See MPEP Section 713.04). If a reply to the last Office action has already been filed, APPLICANT IS GIVEN ONE MONTH FROM THIS INTERVIEW DATE, OR THE MAILING DATE OF THIS INTERVIEW SUMMARY FORM, WICHEVER IS LATER, TO FILE A STATEMENT OF THE SUBSTANCE OF THE INTERVIEW. See Summary of Record of Interview requirements on reverse side or on attached sheet.

Examiner Note: You must sign this form unless it is an Attachment to a signed Office action.

Sara W Crane
Examiner's signature, if required

Continuation of Substance of Interview including description of the general nature of what was agreed to if an agreement was reached, or any other comments: Applicant does not understand why the rejection as set forth in the Office action of 14 July 2003 does not give weight to the claim designations of "active" and "barrier," or why the specific materials set forth in the rejected claims would not distinguish. We discussed these issues, as further elaborated below.

As noted in the Office action of 20 November 2001, the examiner does not see any way to distinguish a superlattice or multi-quantum well layer (made of alternating layers of high and low bandgap materials) from the "active layer" and "multi-quantum barrier layers" as set forth in the first six lines of claim 1, for example. Note that claim 1 allows the "active layer" to be GaN, and one of the two "barrier layers" can also be GaN, so there would presumably be no necessary structural distinction between the functional designation of "active" versus "barrier." In any case, in a prior art superlattice or multi-quantum well layer, any one of the layers of lower bandgap could be identified as an "active layer," and pairs of layers on either side of such a layer could be identified as "barrier layers," because each of the designation functions ("active" and "barrier") would be met by such layers. In other words, patentable weight is given to functional language such as "active" or "barrier" only when that language necessarily gives rise to a structural distinction in the product claimed. Specifically, in the prior art device of Hatakoshi figure 1, for example, the multi-quantum well layer 16 would have a layer of lower bandgap that could be identified as an "active layer," and pairs of layers on either side of such a layer could be identified as "barrier layers." Patentable weight would not be given to the functional language of "active" or "barrier" in the rejected claims, because that language does not necessarily give rise to a structural distinction in the product claimed, as compared to the structure set forth in the prior art of Nagahama et al. If Applicant is relying on the claim language of "active" or "barrier" to provide a structural distinction, an explanation needs to be set forth in the record stating specifically what that structural distinction is.

Also, in the semiconductor art, substitution of one semiconductor material for another is usually regarded as prima facie obvious, as for example when substituting a high bandgap material for another high bandgap material, and a low bandgap material for another low bandgap material For example, it is well known to choose a particular low bandgap material because one desires a particular wavelength of light emission, and then to choose barrier layers in a superlattice or MQW structure in order to provide necessary light and current barriers. One similarly chooses materials for waveguide, clad, substrate, and so forth, in order to provide lattice matching and crystal growth substrates for the desired MQW materials. With respect to claim 1, for example, the superlattice or MQW structure of AlGaN/GaN is known, as shown by the Nagahama reference. It would have been prima facie obvious to use the alternate semiconductor materials of AlGaN and GaN, as taught in the Nagahama reference, instead of the materials used in the Hatakoshi superlattice or MQW layers, for the reasons noted above or in the Office action of 14 July 2003, i.e., to tailor the device to produce a specific wavelength of light output, and to provide the rest of the device layers necessary to produce such a device. Prima facie obviousness can be overcome by a showing of unexpected results arising from the combination of features recited, for example, or by arguments addressed to other factors as set forth in the case law.